

Condition and Prospects of a River Transport of Poland in Transport System of Baltic Sea Region

Igor Arefyev

Maritime University in Szczecin, Poland

The creation of multimodal transport structures of United Europe is focused on development system of all transportation network based on a multimodal principle. One of elements of this structure is the river transport. Work is devoted the analysis and offers on development and inclusion of river fleet of Poland in the general scheme of the multimodal freight traffic as much as possible approached to its geographical position and environmental conditions, as territories of the Baltic region.

Keywords: the Baltic region, a water transport, a freight turnover, multimodal transport process, a waterway.

The water transport of Poland is the constituent multimodal transport system of the Euroasian continent in the organization and realization of cargo carriage in land coastal (coasting) variants. Besides, it can execute both international, and regional moving of consignments of different function (including special), focused on the carriage river-sea in water areas of Baltic and Northern sea. The analysis has shown that the river transport, with rare exception, can execute both initial, and final technological operations of multimodal processes of delivery of consignments to the consumer in any transport knot of United Europe, connected with multimodal transport system of Poland. Therefore, it is not dependent on character and type of the logistical scheme, the river transport necessarily enters into one of them [1]. At the same time, the general potential of possibilities river and the river-sea of transport and waterways of Poland in the general scheme multimodal transport systems of United Europe practically is not used. It is possible to name only really maintained three ways having sufficient weight in total amount of a freight turnover in the Polish territories and in international carriages:

- Channel system Berlin-Svinoujście,
- Bydgoszcz water-transport system,
- waterways system of down the Vistula river.

In 2000 - 2009 the volume of carriages by the Polish river transport has not exceeded 1 % from the general freight turnover of the country that in comparison with United Europe and east neighbours, first of all Russia, looks categorically not enough [1,6].

The positive effect from operation river and the fleet river-sea in Baltic region is known for a long time. On its share it is necessary to 40 % of a freight turnover in Benelux countries, about 30 % - in France and Germany, more than 25 % in Russia, 12 % - in Ukraine, 8 % - in Belarus etc. Obvious benefit of its use in the European market when technological speed of moving of the consignment a vessel in 20 km/hour is commensurable with other kinds of ground transport (40 km/hour – railway, 70 km/hour – automobile). At the same time, the volume of the transported consignment river transport unit (to 3,0 thousand tons) is close to load-carrying capacity of the train (4,0 thousand tons) and in tens times more, than at the car (to 30 tons) at cost of moving of a commodity unit in 4-7 times is cheaper [1,6].

The reason of such position is absence of the main waterways with the guaranteed dimensions of a ship course, characteristic for United Europe and the countries of the Baltic region, absence of a

government program of their development. An exception three water systems, resulted above.

The transport infrastructure of the country which have developed for the last decades, represents obviously expressed matrix and can be ideally presented effective models of optimization and extremum search at modeling of multitransport processes [2,3]. From a Fig. 1. It is not difficult to see that radially-longitude grid of megacities of Poland practically corresponds or is in immediate proximity from knots of crossing of highways of various types land and a sea transport: railway, automobile, river, the river-sea of swimming and marine. This position is confirmed if to reduce in the uniform table of co-ordinate of the basic megacities of Poland, as bases of transport knots (Table 1.1, 1.2.), where: - A-automobile, - the RW-railway transportation, - the S-sea transport, - R-river and the river-sea transport.

Let's in addition notice that such approach to development of the river pipeline system of the country are in complete with ITS plans on the further perfection of a transport infrastructure of the union [4,5]. This conclusion as is visually illustrated developed by Advice of United Europe multitransport scheme Scandinavia – Mediterranean sea which includes also deep-water navigable system in territory of Poland (a Fig. 2.).

Indicated above allows to draw a conclusion on high transport potential of the country in maintenance of all kinds cargo carriage in any variant and a combination of elements multitransport process.

Already today five multimodal transport corridors pass through territory of Poland, operates more than 60 multimodal knots of various capacity and the appointments largest from which have been resulted in Table 1 and 2. From this it is visible that the transportation network of Poland can effectively realise both own, and international cargo delivery, including transit, practically on all territory of the country. But river fleet sharing really considerably only on directions Szczecin-Gdynia-Kaliningrad, Berlin-Szczecin- Świnoujście (German: *Swinemünde*), Bydgoszcz pool, down Wisła pool (a Fig. 2.).

The freight turnover analysis East – the Western Europe for the last five years has shown its constant growth. The same concerns and transported volumes of the consignment from

Scandinavia on the South of Europe and to Mediterranean sea [6]. It is necessary to notice that more than 60 % of this transit freight turnover are realized through territory of Poland [3]. In these conditions rather perspective decision of the organization of such transit and own requirements for delivery of the goods is universal transition on multitransport work schemes in a multimodal variant [7].

The modern line development of transport logistics is based on creation of multimodal systems when the choice of various variants of delivery of the consignment depending on its requests and possibilities is offered to the client. A consequence of this process is creation of multimodal transport corridors, unification of kinds of a transport service: customs, boundary, service, logistical the principle of carriages when all types of transport are integrated into a uniform complex where the competitiveness is entered not by separate types of transport, and transport multimodal corridors and their necessary parts (sections of highways, transport knots, volume and service cost, etc.) Is, etc. declared. Sharp backlog of Poland for the named reasons have led to its replacement from this necessary and profitable type of service.

River transport, unlike railway and the more so automobile possesses the big reserves on carriage the whole nomenclature of consignments: bulk, ore and nonmetallic products, container, gas-liquid and petroleum. For example, throughput of the Rhine water territorial plot (Germany) constitutes to 120 million tons a year, the Volga waterway (Russia) – to 150 million tons a year. Thus, initial single expenses of the organization of navigation on natural waterways on 1,0 kilometer of a highway with the guaranteed dimensions of a ship course (court load-carrying capacity to 3000 tons) in 2,5–3,0 times it is less, than on building of a similar highway with a firm cover and in 1,8-2.5 times there is less than creation of 1,0 km. A plot of a two-acceptable railway way [2,7].

Building of channels and hydraulic engineering structures with sluices requires considerably the big investments. However such structures, as a rule, along with improvement of navigable conditions, in a complex decide also others, the major for nowadays Poland problems: power, water supply, irrigation, ecology.

The river fleet role in the general transport system of the Baltic region will be advanced in many respects not so much by its uniqueness and entry in the general multimodal transport complex how many degree of its competitiveness connected with cost levels of carriages, introduction and development of new norms of commercial service of clientele. Thereupon one of the primary goals on a near-term outlook river and the river-sea of ports, transport knots will be introduction of complete transport service, preparation of conditions for development and development of logistic schemes of carriages on stable goods traffics. Such decisions will allow Polish river and the river-sea fleet to be included in the united Baltic and European water transport system (a Fig. 2).

The analysis of a condition resulted in the present work river and the river-sea of transport of Poland as an element of united Europe-Baltic cargo delivering structure, allows to make a number of conclusions:

1. Creation of a uniform effective transportation network of Europe, as much as possible approached to geographical conditions of the Baltic region requires development of waterways of Poland for the purpose realisation in its territory modern multitransport a network based on a multimodal principle.
2. Modernization of the traditional scheme of the organization is necessary operations in separate cargo handling complexes (port, a railway station, the terminal, etc.) and transition to creation of transport knots in items of crossing of all types of transport as Hamburg (Germany).
3. Problems following from the resulted analysis are complex problem. Working out of the technical project requiring in each specific case, the avan-project, the feasibility report and their inclusion in the corresponding transport program of United Europe on the Baltic region.

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Table 1. Grouping Transport Units of Poland on east longitude

Nº	Transport unit	East longitude	Norh longitude	Crossing of highways of transport types
1	2	3	4	5
1	Zasieki	14,5	51,7	ARWR
2	Szczecin	14,5	51,5	ARWRS
3	Świnoujście	14,5	54	ARWRS
4	Wrocław	17	51	ARWR
5	Poznań	17	52,5	ARWR
6	Słupsk	17	54,5	ARWR
7	Opole	18	50,5	ARWR
8	Kalisz	18	51,7	ARWR
9	Bydgoszcz	18	53,2	ARWR
10	Gdynia	18,5	54,5	ARWRS
11	Katodbwt	18,8	50,5	ARW
12	Грудзень	18,8	53,5	ARWR
13	Łódź	19,5	51,7	ARW
14	Kraków	20	50	ARWR
15	Tarnów	21	50	ARW
16	Warszawa	21	52,5	ARWR
17	Rzeszów	22	50	ARW

18	Stalowa Wola	22	50,5	ARWR
19	Lublin	22,5	51,2	ARW
20	Białystok	23	53,2	ARW

Source.: to develop their own

Table 2. Grouping Transport Units of Poland on a northern latitude

№	Transport unit	North latitude	East longitude	Crossing of highways of transport types
1	2	3	4	5
1	Kraków	50	20	ARWR
2	Tarnów	50	21	ARW
3	Rzeszów	50-	22	ARW
4	Opole	50,5	18	ARWR
5	Stalowa Wola	50,5	22	ARWR
6	KAtowice	50,5	18,8	ARW
7	Wrocław	51	17	ARWR
8	Lublin	51,2	22,5	ARW
9	Zasieki	51,7	14,5	ARWR
10	Kalisz	51,7	18	ARWR
11	Łódź	51,7	19,5	ARW
12	Poznań	52,5	17	ARWR
13	Warszawa	52,5	21	ARWR
14	Bydgoszcz	53,2	18	ARWR
15	Białystok	53,2	23	ARW
16	Szczecin	53,5	14,5	ARWRS
17	Грудзень	53,5	18,8	ARWR
18	Swinoujście	54	14,5	ARWRS
19	Słupsk	54,5	17	ARWR
20	Gdynia	54,5	18,5	ARWRS

Source. to develop their own

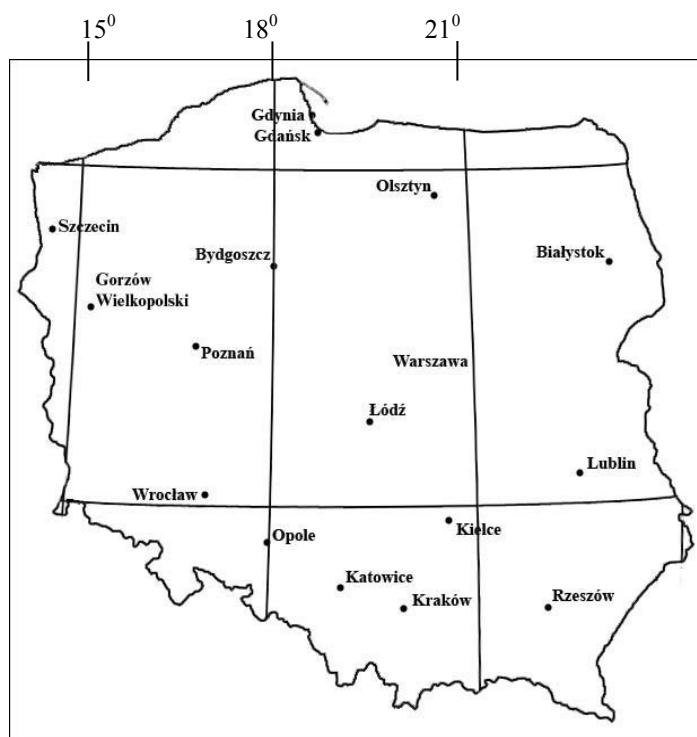


Fig. 1. Circuit transports knots of highways in Poland

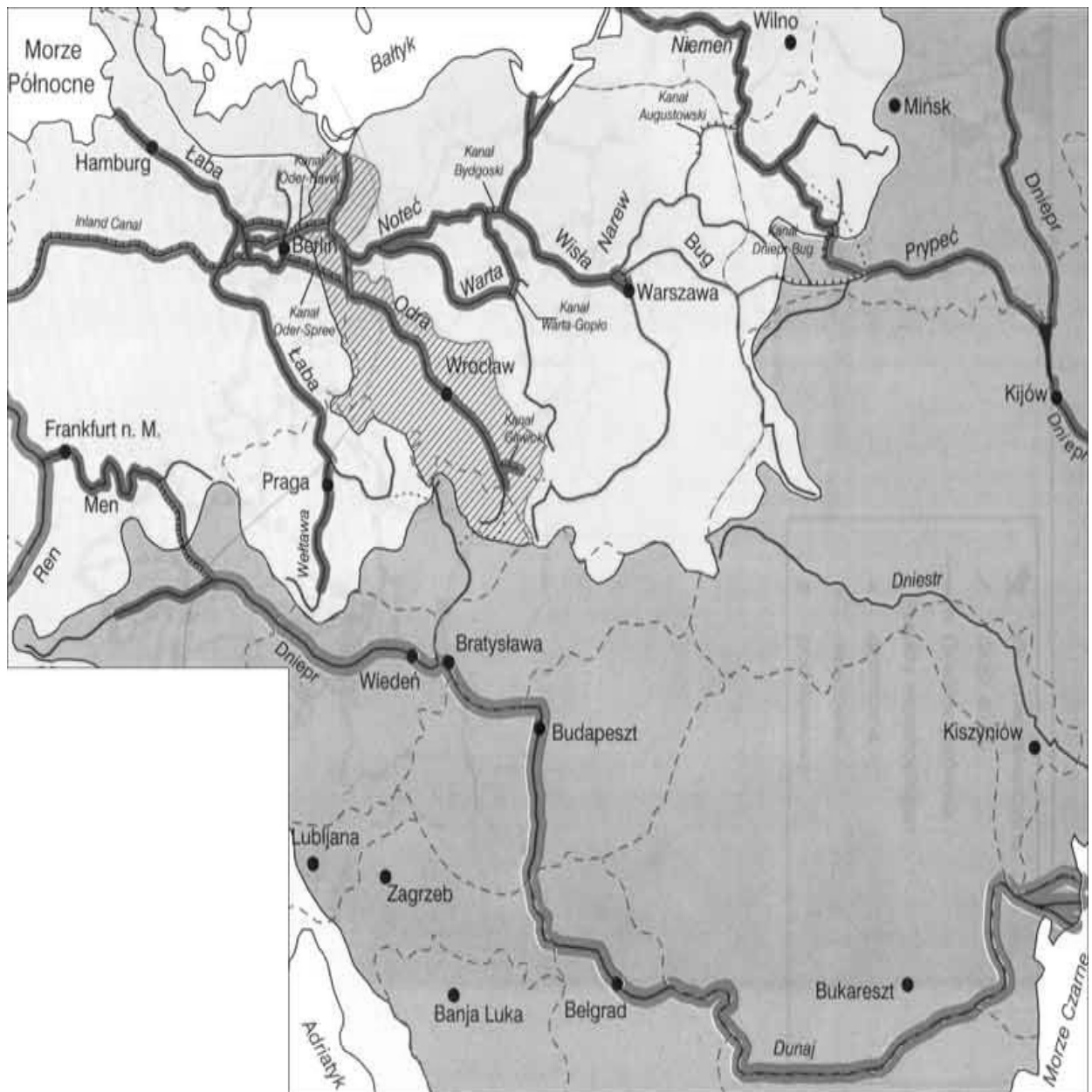


Fig. 2. Navigation in Central Europe

Igor Arefyev
 Maritime University in Szczecin, Poland
 i.arefyev@am.szczecin.pl

